XYLOPHAGIDÆ. Williston, Entomologica Americana, i, 114, 1885.

STRATIOMYIDÆ. Williston, l. c.

LEPTIDÆ. Williston, op. cit. i, 10, 1885.

TABANIDÆ. Osten Sacken, Prodrome, etc., Memoirs Bost. Soc. Nat. Hist., ii, 1874–78.

BOMBYLIDÆ. Osten Sacken, West. Dipt., Bull. U. S. Geol. and Geogr. Surv. iii, 189, 1877; Coquillett, Canadian Entom., 1886.

ASILIDÆ. Williston, Trans. Amer. Entom. Soc. xi, 1, xii, 53.

DOLICHOPODIDÆ. Loew, Monographs, ii, Smithsonian, 1864.

ŒSTRIDÆ. Brauer, Monographie der Œstriden, Vienna, 1864.

CONOPIDÆ. Williston, Trans. Conn. Acad. iv, vi, 1882, 1885.

SYRPHIDÆ. Williston, Bull. National Museum, 31, 1886.

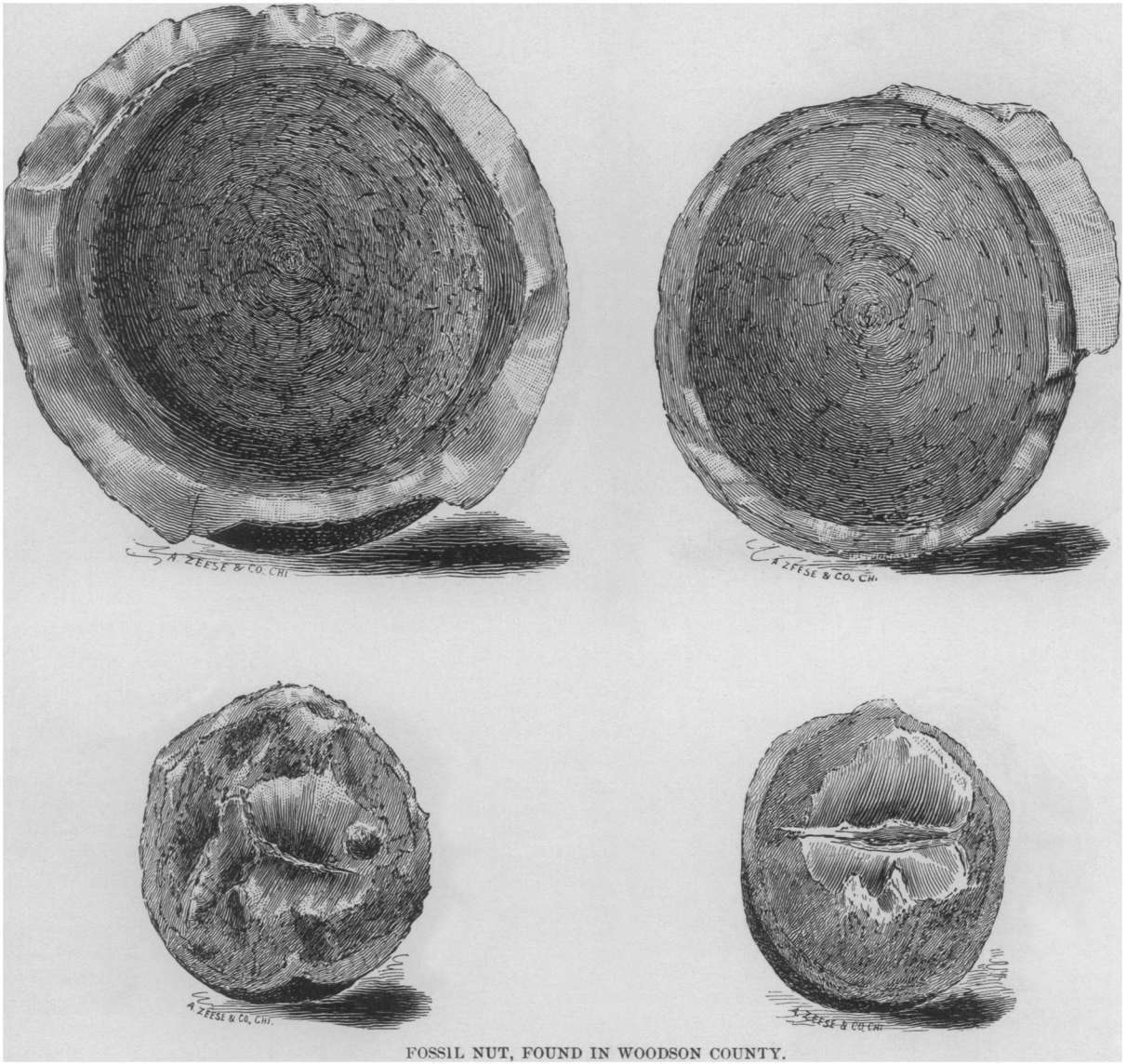
MUSCIDÆ ACALYPTRATÆ (*Ortalidæ*, *Trypetidæ*, *Sciomyzidæ*, *Ephydridæ*). Loew, Monographs, etc., i, iii, Smithsonian, 1862, 1873.

ANTHOMYIDÆ, HIPPOBOSCIDÆ, SARCOPHAGIDÆ, DEXIDÆ, etc. Bigot, Annales Soc. Ent. Fr. 1880–86.

NOTE ON A REMARKABLE FOSSIL.

BY ROBERT HAY, JUNCTION CITY, KAS.

Some time ago, on Sand creek, in Woodson county, a farmer's plow turned up what might be called a fine concretion in a district where concretions are plentiful. It was an oblate spheroid, very nearly a sphere, made of the hard clayey ironstone, so common in that region in the form of nodules. Its smallest circumference is 9 inches, its greatest circumference 9½ inches. Being so nearly a sphere, it was a boy's toy for six months, when a spirit of investigation being upon him, he broke it with an ax and showed the internal structure. It appeared to the boy and his friends to be a perfectly petrified walnut. The fracture made two concave hemispheres, out of which dropped the round nut broken into several pieces, showing internal septa. A few small fragments were lost, but the rest then fell into the hands of J. B. Stockton, of Toronto, by whose kindness the writer is permitted to submit it to the Academy. The outside portion of this petrifaction, to the thickness of five-sixteenths of an inch, is undoubtedly concretionary matter. Within that and closely adherent to it is another layer, that seems as certainly to be of organic origin. This layer is three-sixteenths thick, and seems of a fibrous structure like the outer rind of a walnut or hickory nut. The concave surface of this layer is irregularly marked with hard brown lines, which stand in slight relief from the rest, which is softer and yellowish in color. The spaces between the lines are wider near the poles of the sphere. This envelope shows no signs of segments in any direction. The outside surface of the included nut is marked by lines and spaces corresponding to those on the concavity of its envelope, but giving a much smoother surface, being somewhat smoother than the corresponding surface of an English walnut. This shell appears to be divided into three layers, having a total thickness of one-eighth of an inch, and a fourth layer another eighth, which sends off the septa across the nut. The principal septum is double. The internal cavities are hollow, having probably been filled, before the nut was broken, with some softer material, as dust or sand. The longest diameter —transverse to the septum— is one inch and five-eighths; the shortest, one inch and



FOSSIL NUT, FOUND IN WOODSON COUNTY.

seven-sixteenths. If this be a true nut, the position in which it was found is remarkable. Though exactly like ferruginous nodules of the neighboring coal measures, it cannot be supposed to belong to paleozoic time. It might, however, belong to the Dacotah sandstone of mezozoic times. If so, it will be another fact pointing towards a more eastern extension of the cretaceous formations than their present outcrop indicates. Still, the writer has found a large inoceramus in a creek bed eight miles east of Manhattan, and Dacotah gravel in Atchison county. Bits of chalk are not uncommon in secondary drift. The distance to which such concretions might be carried by quaternary agencies (or tertiary) is not easy to fix, and it may be that the carriage of our fossil is nearly from the present outcrop of the Dacotah formation, though how it crossed the high ridge of the Flint hills is still a difficulty.

NOTES AND DESCRIPTIONS OF NORTH AMERICAN TABANIDÆ.

BY S. W. WILLISTON, PH. D.

A review of my material in the family *Tabanidæ* has furnished occasion for notes of more or less interest, and the description of a number of species which I believe to be new. This material, including one hundred and ten species, has enabled me to identify with assurance most of the known species—a task that has been greatly lightened by Osten Sacken's thorough work in this family.

It is of interest to note that, hitherto, not a single one of our species in this family has been found identical with a European one, a statement that I think cannot be made of any other dipterous family of any size. The North American *T. flavipes* Wied. has, it is true, been discovered from among specimens from the Amoor in eastern Siberia, by Brauer, in company with a species common to Europe; but this is, I believe, the only known instance in which the habitats of any European and American species have been found to be anywhere in common.

The characters given by Osten Sacken for the disruption of *Tabanus* into the smaller groups, *Therioplectes* and *Atylotus*, though of importance, are insufficient, I believe, to warrant their use as generic characters. The genus *Atylotus*, Osten Sacken based chiefly upon the absence of the ocellar tubercle and the presence of ocular pilosity, but that he did not accept these characters himself as the chief generic distinctions is shown conclusively by his final location of *T. Rheinwardtii* Wied. and *T. cerastes* O. S., both with the above-given peculiarities, under *Tabanus sensu stricto.* On the other hand, other minor differences given for this genus Brauer states are not applicable to the European species. In some cases the ocellar tubercle is a distinct and easily appreciable character, but in others it is nearly or quite impossible to decide whether a given species has or has not such a tubercle. Certainly, in my early experience in the use of the table prefixed to Osten Sacken's Prodrome, no character was a greater source of doubt to me than the present. The character, moreover, is a sexual one, the ocellar tubercle being present in males where it is absent in females. For these reasons I have rejected *Therioplectes* and *Atylotus* as genera, though the retention of the names is desirable as expressing in many species certain definite groups of characters.

As usual in collections, I have but few males for comparison, but it is possible that a character of some value may be found in the claws, pulvilli and empodia. Whether they are enlarged in all males, I do not know; certainly they are in many.